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2010 CENSUS PLANNING MEMORANDA SERIES

No. 14

MEMORANDUM FOR The Distribution List

From: Teresa Angueira *[signed]*
Chief, Decennial Management Division

Subject: Re-engineering the 2010 Decennial Census: The Baseline Design
for 2010

Attached is the Baseline Design for the 2010 Census. This document outlines the key components and functional capabilities that we envision to be used to conduct the 2010 Census. The design represents a fundamental shift in our business processes and is contingent upon three critical components: (1) adequate resources for early planning, development and testing of new procedures, methodologies, and testing; (2) conducting tests and improving the design based on what we learn; and (3) the full implementation of the American Community Survey and the MAF/TIGER Enhancements Program.

The design outlined in this document will mature and evolve as we learn from our planning, testing, and development activities. Once finalized, we will implement the design in the 2010 Census to increase the relevance and timeliness of census long-form data, to reduce operational risks, to improve census coverage, and to contain costs. This document will be updated and redistributed when major or many changes occur.

Attachment

This draft document is preliminary in nature and in the early stages of development. As such, it is subject to revision. Our intent in making this working document available at this time is to inform ongoing discussions related to our efforts to plan, develop and test a reengineered design for the 2010 Census.

Reengineering the Decennial Census

The Baseline Design for 2010

Decennial Management Division

Version 1.5 – May 2003

Introduction

This document describes a baseline design for the 2010 Decennial Census outlining the key components and functional capabilities that we envision will be in place, and used to conduct, that census. In some places, our discussion is very specific. In others it is more general. This reflects our current knowledge of what we can achieve as a result of our efforts to reengineer the decennial census.

This baseline design incorporates fundamental successes and lessons learned from Census 2000, and assumptions about 2010 are consistent with Census 2000 except where specifically noted. It is important to stress that our work is ongoing, and that this design will evolve as we learn more about the innovations we are exploring. That is, over the next four years, the *baseline* design will be modified as we blend what we learned from Census 2000 with the results of our efforts to research, test, and develop operations, technologies, and systems for 2010. A *mature* design must be in place by 2007 in order to plan and conduct a true Dress Rehearsal in 2008, which in turn will yield a *final, proven* design for the 2010 Census.

The need for and justification of a re-engineered decennial census program have been documented in some detail elsewhere, so details are not repeated here. For the same reason, this document does not repeat detailed descriptions available elsewhere of the overall goals we are using to guide the re-engineering effort:

1. Increase the relevance and timeliness of census long-form data.
2. Reduce operational risk.
3. Improve the coverage accuracy of the census.
4. Contain costs.

To meet these goals, we have embarked upon three highly integrated initiatives:

The American Community Survey – An on-going household survey designed to collect and tabulate census long-form data every year throughout the decade. Besides more timely data, the existence of the ACS eliminates the need to collect long-form data in 2010, so that the 2010 Census can focus on short-form data collection and coverage.

The MAF/TIGER Enhancements Program – A multi-year effort to enhance and improve our existing Master Address File (MAF) and geographic information system (known as TIGER) by bringing them into alignment with true global positioning system (GPS) coordinates, and converting the TIGER data base to a commercial off-the-shelf database environment. Besides improvements to our nation's geographic information infrastructure, the completion of the program will enable the 2010 census to use GPS-equipped, hand-held computing devices for data collection.

2010 Planning, Testing, and Development – An integrated, multi-year program that will allow us to completely restructure the management and conduct of a short-form only census in 2010. It will use new methods and technologies that build on the ACS and MAF/TIGER enhancements,

and implement a series of large mail out and field tests, as well as special purpose tests, all timed to enable us to conduct a true dress rehearsal in 2008.

Baseline Design for 2010 Decennial Census

- We will use GPS-equipped mobile computing devices (MCD) that will enable enumerators to locate and update address information for housing units, conduct interviews, transmit the data directly to headquarters for processing, and receive regularly updated field assignments.
- Through the use of automation and MCDs, we will significantly reduce the amount of paper used in the field (including questionnaires, address registers, maps, assignment sheets, and payroll forms) and the large number of staff and amount of office space required to handle that paper.
- People responding to the census will have more options available to them. Many households will be mailed bi-lingual questionnaire packages (at minimum, English/Spanish), and there will be more support for census respondents that speak languages other than English.
- Expanded use of Internet and telephone systems (using Interactive Voice Response) will provide new opportunities for using technology to make it easier for people to complete their questionnaire.
- With a short form only census, we will increase response rates by taking advantage of the historically higher response rates for short forms, through the development of communications strategies that employ the optimal mix of contacts with the public to enhance our outreach efforts, and by mailing a second form to people who have not returned their census.
- When address list updating gets underway in 2009, census geographers and field staff will be working with an address list unprecedented in its accuracy and completeness. As part of the MAF/TIGER Enhancements Project, the Local Update of Census Address program (LUCA) will have been streamlined and improved based on lessons learned from the Census 2000 LUCA experience, and the address list for the entire universe will have been maintained and updated on a continuing basis. We will be able to reduce pre-census address list updating operations because the address list has been maintained for all areas throughout the decade. There will be an address updating operation in 2009 in areas that we believe have experienced significant changes.
- The streamlined, ongoing LUCA program will culminate with a final opportunity for local governments to review their address lists, which will occur prior to address canvassing. We will then validate any LUCA adds during address canvassing. We will have a New Construction operation, and will attempt to include these addresses in questionnaire delivery. The New Construction adds will be validated during a later operation. We will

not conduct a post-census local review operation but will continue examining the options for providing communities with one last chance to improve completeness of the census address list.

- Field staff conducting this address canvassing will use MCDs to obtain their assignments, update maps, navigate to assignment areas, and record the data they collect. These same devices will later be used for nonresponse follow-up, improving the accuracy and efficiencies of this critical and expensive operation. Data capture will be streamlined through the electronic transfer of address information directly into headquarters processing systems. Field staff will be using GPS equipped devices that assist with navigation and reduce the time needed to complete their assignments.
- Other processing operations will ensure the integrity of the address list and our geographic database. We will work with USPS, local, and tribal partners to obtain current address information and to ensure enumeration of those addresses. Whenever we identify new housing units or those that no longer exist, we will update our files. Processing these changes is a continuing operation to update our address list and our geographic database.
- We will not need to conduct an additional operation to deliver questionnaires to housing with addresses deemed “undeliverable” by the USPS due to our much improved address list.
- Dramatic reductions in paper based data processing will result in the establishment of at most three data capture centers, instead of the four sites in place during Census 2000, and they are likely to be reduced in size. In addition, we expect to be able to reduce the clerical and administrative LCO staff costs by as much as fifty percent. The LCO’s will be significantly smaller, and there will be a significant reduction or possible elimination in the equipment needed for map production and address registers.
- Improved response rates and the elimination of the long form from the decennial census will reduce the NRFU workload and hold down the total number of LCOs that we will have to establish.
- Questions on race and ethnicity on the 2010 Census questionnaire will be structured to produce accurate and complete data concerning race and Hispanic origin, and we will determine the optimal use of wording and the appropriate inclusion of examples and instructions such that respondents will clearly understand the intent of the question, and the way they are supposed to answer it. In addition, all questions will have been adapted to ensure that they elicit comparable data across all response modes, including paper, the Internet, telephone and direct interviews in the field. The Census Bureau also will improve the census questionnaire to ensure that persons with multiple residences provide accurate data concerning where they and their dependents should be enumerated. And ongoing work on forms design, messages, layout and instructions will result in a form that is simple and easy to understand.

- Fundamental to the vision of the 2010 census is expanding the ways people can be counted. Following a widespread awareness campaign, households will receive an advance letter in the mail before April 1, 2010. The letter will tell them about the census and the ways they can participate, using English or other language methods. Shortly thereafter, they will receive a census questionnaire in the mail. A reminder postcard will follow the questionnaire mailing, and, finally, those households that have not yet responded will be sent a second questionnaire.

In the 2010 Census we also will use technology to build on this strategy by combining these mailings with Internet and telephone contacts. These technologies will provide respondents with additional options for receiving and submitting their census questionnaires. Our expectation is that we can increase the response rate even further by developing and implementing the optimal mix of contacts and response options. By taking advantage of the Internet and the telephone we can significantly increase the number of forms that move directly into data capture without needing to be scanned in a data capture center.

In selected areas, the questionnaire package will be bilingual in English and Spanish (at least—other combinations will be used if possible). In addition, there will be in-language questionnaires (for multiple languages) available upon request.

As part of a “Be Counted” or “Were You Counted?” effort, we will provide opportunities to be counted to those people who, for whatever reason, believe they had not been counted.

- While the U.S. Postal Service (USPS) will deliver census information and questionnaires in most of the country, census workers will distribute questionnaires and update address lists as part of an update/leave procedure in some areas. Again, census workers will collect data electronically using GPS-equipped mobile computing devices (MCDs) with electronic maps, location descriptions, and other information about their assignments.
- Frame development activities for Special Places and Group Quarters will begin with updating the Census 2000 inventory. An integrated approach to update housing units along with GQs will be implemented to reduce duplication and ensure complete coverage of all addresses. Specially trained enumerators will utilize MCDs where appropriate and implement a variety of refined procedures to obtain accurate counts and appropriate characteristics. These procedures will also ensure the correct classification, geographic location, and unique identification of these places.
- Various special procedures will be used in areas where extra effort to complete the enumeration is needed, or for individuals with special living situations. For instance, procedures will be tailored to conduct the best possible enumeration of Remote Alaska, American Indian and Alaska Native areas, and Hawaiian homelands, Colonias, migrant workers, and persons without conventional housing.

- A strong marketing campaign, including paid advertising, and a network of partnerships with community organizations; state, local, and tribal governments; and others will inform, remind, encourage and facilitate participation in the census.
- Despite all efforts to encourage everyone to provide information, we project that we will not obtain mail, Internet or telephone IVR responses from as many as 31% of the addresses to which we deliver a questionnaire. Many of these addresses will be vacant or nonexistent, but many will be occupied. Therefore, we must still conduct a nonresponse follow-up operation.
- We will attempt some nonresponse follow-up by telephone, but most often field staff will make personal visits using MCDs. MCDs will provide enumerators with their cases and assignment areas, along with geographic information from the MAF/TIGER system that will allow them to travel to and within their assignment areas efficiently, reducing time and mileage. Enumerators also will have GPS data and electronic maps on their MCDs. They will conduct interviews and record the information electronically and transmit data and administrative information on a daily basis, so that the information is quickly available both to the headquarters processing systems and to the daily payroll and progress reporting systems. They also will receive updated assignments and instructions on the same daily basis.
- Updated assignments also will reflect late mail returns on a daily basis, thereby significantly reducing the number of interviews conducted at housing units who had responded to the census after we had prepared the NRFU assignments.
- Even after nonresponse follow-up, there will be people missing from the census enumeration, and others counted more than once, so we will carry out additional operations to further improve coverage accuracy. During the Coverage Improvement Follow-up Operation (CIFU) Census workers will visit housing units previously designated as vacant or nonexistent, but not confirmed by a second source. We will call or visit addresses for which we have no or insufficient data for any of a number of reasons, or which we believe were constructed too late to receive census questionnaires and information. We will implement new procedures for identifying households and persons that have been counted more than once. A national unduplication system will be implemented through the application of record linkage theory to extremely large data sets, and a real-time unduplication operation will be in place to flag potential duplicate records as the data are collected.
- As the data supplied by respondents are captured, they will be immediately processed to assure their accuracy and completeness. For example, automated systems will check each questionnaire to determine if there is any indication that one or more persons may be missing. Whenever there is such an indication, we will follow up to add people as appropriate. Other checks will determine how complete the data are for each person. Responses that require automated coding will be coded on a flow basis as they are received. When we receive multiple responses from any particular address, we will

compare (match) these responses to each other and to other addresses to make sure that missing people are included and that they are not counted more than once.

- Subsequent to the completion of data capture and processing we will fully evaluate the accuracy of the coverage we achieve. We will use these results to estimate the number and characteristics of people and units we missed, counted more than once, or counted in the wrong location. However, we do not plan on developing a procedure for adjusting the 2010 Census data for reapportionment or redistricting purposes.
- We will conduct a short-form census of Puerto Rico incorporating appropriate methodologies developed for stateside operations. The ACS will also be conducted in Puerto Rico.
- We will conduct a census of Island Areas that includes a long form and incorporates appropriate developed for stateside operations.
- We will conduct a census of Americans living overseas depending on the results of development and testing activities now underway.
- We will conduct a Count Review program in conjunction with representatives from the Federal-State Cooperative Program for Population Estimates (FSCPE) to identify local problems in the data, making corrections where possible.
- Once the final population counts have been processed, we are ready to provide the data. The first data produced from the census are the state totals to be provided to the President by December 31, 2010. These counts are used to reapportion the seats in the U.S. House of Representatives. Between that date and April 1, 2011, we will provide tabulations to each state so that they can redraw congressional, state, and local legislative districts. The boundaries of areas for which redistricting data are supplied will have been identified through partnerships with state officials, an effort that begins several years before Census Day.
- Most of the data from the census will be tabulated and then disseminated electronically using the latest version of the American FactFinder. We will provide a full range of maps and other geographic products in hard copy and digital form as we have for Census 2000.
- We will plan and implement evaluation projects to assess, evaluate, and analyze results from the 2010 Census that will be similar to the evaluation program implemented in Census 2000 in scope, size and design.
- We will meet archiving requirements using microfilm images.
- We will conduct a Count Question Resolution program for local governments.

Conclusion

This is our vision for an improved decennial census in 2010 that represents a fundamental shift in our business processes. The realization of this vision is contingent upon three crucial developments:

- 1) Adequate resources for early planning, development and testing of new procedures, methodologies and systems;
- 2) Conducting our testing activities and improving our design based on what we learn; and,
- 3) The full implementation of the American Community Survey and the MAF/Tiger Enhancements Program.

The design outlined in this document will mature as we learn from our planning, testing and development activities. Once finalized, the design will move beyond the procedures, systems and methodologies we used in Census 2000 to implement a reengineered decennial census in 2010 that increases the relevance and timeliness of census long-form data, reduces operational risk, increases the coverage accuracy of the census, and contains cost.